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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF:

RENATO JOHN RECIO, ET AL.

SERIAL NO.: 09/692,350

FILED: OCTOBER 19, 2000

FOR: EFFICIENT PROCESSOR FOR
HANDOVER BETWEEN
SUBNET MANAGERS

ATTY. DOCKET NO.: AUS920000621US1

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EXAMINER: MOHAMMAD A. SIDDIQI

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Sir:

This Brief is submitted in support of the Appeal of the Examiner's final rejection of Claims 1-20 in the above-identified application. A Notice of Appeal was filed in this case on October 21, 2004 and received in the United States Patent and Trademark Office on October 21, 2004. Please charge the fee of \$500.00 due under 37 C.F.R. §1.17(c) for filing the brief, as well as any additional required fees, to IBM Deposit Account No. 09-0447.

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REAL PARTY IN INTEREST

The real party in interest in the present Application is International Business Machines Corporation, the Assignee of the present application as evidenced by the Assignment set forth at reel 011221, frame 0299.

RELATED APPEALS AND INTERFERENCES

Appeal Brief, Serial No. 09/692,342 (Atty. Docket No. AUS920000620US1), filed on November 8, 2004 in related patent Application, and Appeal Brief, Serial No. 09/692,347 (Atty. Docket No. AUS920000622US1), filed on July 28, 2004 in a related patent Application may affect or be affected by the Board's decision in the present appeal.

STATUS OF CLAIMS

Claims 1-20 stand finally rejected by the Examiner as noted in the Final Office Action dated July 21, 2004. The rejection of Claims 1-20 is appealed.

STATUS OF AMENDMENTS

Appellants' Resubmission of Substitute Specification with Corrected Mark-Up Copy per C.F.R. §1.125(b)(c) and §1.52(b)(c) and Request for Reconsideration, filed on October 7, 2004, was entered by the Examiner. No amendments to the claims have been made subsequent to the Final Action from which this Appeal is filed.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellants' invention provides a method for efficiently merging subnetworks into a single merged network with a single network manager and single database for controlling the entire merged network. Specifically, Appellants' claimed invention includes linking a first subnet, having a first subnet manager and database utilized to control the first subnet with a second subnet having its own subnet manager and database for controlling the second subnet. Once the networks are linked (physically connected), one of the two subnet managers is dynamically selected and configured as a master subnet manager that controls the entire merged network (and merged database). These features are recited in independent Claims 1, 9, and 17

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and supported in the specification (references to numbered paragraphs of substitute specification filed on October 7, 2004) at numbered paragraphs 7, 22, 66, and 67-70.

Additional features of the claimed invention includes: (1) absorbing subnet configuration entries from the second database into the database of the master subnet manager (Claims 3; 11, 18); (2) selecting amost recent time stamped global unique identifier (GUID) entry for inclusion in the maser subnet manager's database when multiple entires (from different merged databases) have the same GUID, and discarding the GUID not selected (Claims 2, 4, 5, 10, 12, 13, 20; numbered paragraphs 66, 68, and 71) ; and (3) when a P_Key entry of a GUID in the first database is the same as the P_Key entry of a GUID in the second dtabase, changing all occurences of the P_Key entry in the database being migrated to the merged database to a new, unused P_Key entry, such that each GUID has a unique P_key entry (Claims 6 and 14; numbered paragraphs 67, 72)

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- A. The Examiner's rejection of Claims 1, 9, and 17 under 35 U.S.C. §103(a) as being unpatentable over the combination of *Toh, et al.* (U.S. Patent No. 5,987,011) (hereinafter *Toh*) in view of *Kakemizu, et al.* (U.S. Patent No. 5,805,072) (hereinafter *Kakemizu*) is to be reviewed on Appeal.
- B. The Examiner's rejection of Claims 7, 15, 18, and 19 under 35 U.S.C. §103(a) as being unpatentable over the combination of *Toh, Kakemizu, and Mahalingaiah, et al.* (U.S. Patent No. 6,754,214) (hereinafter *Mahalingaiah*) is also to be reviewed on Appeal.
- C. The Examiner's rejection of Claims 2-6, 8, 10-14, and 20 under 35 U.S.C. §103(a) as being unpatentable over the combination of *Toh, Kakemizu, and Jensen, et al.* (U.S. Patent No. 6,185,612) (hereinafter *Jensen*) is also to be reviewed on Appeal

ARGUMENT

A. Examiner's rejection of Claims 1, 9, and 17 under 35 U.S.C. §103(a) as being unpatentable over the above combination of *Toh* in view of *Kakemizu* is not well founded and should be reversed.

Claims 1, 9 and 17

Appellants hereby incorporate by reference the arguments proffered in Amendment A and the Resubmission ... and Request for Reconsideration. Appellants reiterate that *Toh* and the combination of *Toh* and *Kakemizu* does not suggest to one skilled in the art the features recited by Appellants' independent claims. Specifically, the combination fails to suggest selecting a single one of the two subnet managers as a master subnet manager that controls/manages the entire merged network of two subnets.

Examiner relies heavily on *Toh* to support the above rejection (and subsequent rejections). *Toh* provides a "routing method for ad-hoc mobile networks" by which a communication route is selected "through the network from the source mobile host to the destination mobile host based on the stability of the communications links" (emphasis added; col. 3, ll 1-30; col. 4, ll 34-51). *Toh* provides a loosely aligned wireless network of mobile hosts ("nomadic collaborative computing" col. 7, lines 38) that communicate with each other via wireless communication links that may or may not be stable (id.). The stability of each link affiliated with a mobile host is measured by "periodically transmitting and receiving identifier beacons (ticks)" (col. 3, ll 39-56; col. 4, ll 52-67), and the stability measure is stored within the mobile host (col. 3, ll 56-62).

While Figure 4 of *Toh* provides the term "merged subnet," to describe the linking of mobile computers via wireless medium, that figure and the description thereof fails to teach (or suggest) wired subnets, each having an actual "subnet manager" or functionality associated with use of a subnet manager to control the entire subnet. That is, col. 7, lines 16-40 provides the following:

[T]wo subnets 14,15 linked by a subnet bridging mobile host 16. Moves by a mobile host 16 which is performing subnet bridging function... can fragment the merged mobile subnet into smaller subnets 14,15. ... On the other hand, moves by certain mobile hosts can also result in subnets 14,15 merging... **updating all the nodes' routing tables...** However, use of the associativity characteristic .. updates only the affected mobile hosts' associativity tables (emphasis added).

It is very clear from the above description, that *Toh* maintains all of the routing tables for all of the computer modules, and thus *Toh* teaches away from a key element of Appellants' merging of subnets, i.e., the merging of databases into a merged database under control of a single subnet manager. Further, col. 7 lines 16-40 is devoid of any teaching of (1) a subnet manager associated with and controlling each subnet (*Toh* provides a loose association of communicatively coupled wireless mobile devices with no single device managing the subnetwork); (2) a dynamic selection step for choosing among two subnet managers; (3) assigning and configuring the selected subnet manager as a master subnet manager that (4) controls the entire merged subnet.

Bridging a subnet to enable communication between two collections of loosely associated devices (which *Toh* refers to as a subnet) is inherent different from actual merging of control functionality of the resulting merged subnet in a single master subnet manager, which controls the entire merged subnet, including a merged database. Wirelessly linking/bridging independently controlled mobile devices in a subnet configuration with other independently controlled mobile devices in a second subnet configuration is not synonymous nor suggestive of enabling a single manager among the two (or more) subnets to control/manage the entire grouping of subnets.

Toh at col. 3, lines 57-60 describes "associative tables ... storing stability for each of the communications links of the particular mobile host" and at col. 18, lines 39-47, describes that when a mobile host "receives identifier beacons generated by other mobile hosts, it automatically invokes ... mobile-to mobile communication. However, when it receives... the base stations, ... access to wired network and hence conventional routing protocols supported by location

management, registration, handovers, etc. can be invoked. The latter section enables the mobile host to decide "which communication mode ... best suits the service requirements." Both these sections are devoid of any reference to a selection of a subnet manager as a master from among two subnet managers of merged subnets.

Examiner correctly states that *Toh* is silent about the database utilized to control the subnet. Examiner references col. 4, ll 52-67 of *Kakemizu* and figures 2B, 2C and 4 to support the rejection of this feature. That section of *Kakemizu* describes a "routing table which sequentially stores optimal routes for switching nodes managed by the home one-layer subnet manager" (ll 52-56). Notably, col. 3, ll 45- col. 4, ll 14 clearly describes the configuration of *Kakemizu's* system as having a number of subnet managers that are connected together and "share the management information" and "exchanging messages" to enable "call processing between the subnet managers." It is clear that the networks are distinct networks connected together with each subnet manager continuing to function as a manager for that subnet while connecting to another subnet manager. The routing table provided in the referenced section is supporting only the particular subnet manager and each subnet manager accesses and/or has access to its own routing table or a shared routing table.

Clearly, Examiner's rejection of the above independent claims is deficiency and should be reversed.

B. Examiner's rejection of Claims 7, 15, 18, and 20 under 35 U.S.C. §103(a) as being unpatentable over the combination of *Toh*, *Kakemizu* and *Mahalingaiah* is not well founded and should be reversed.

Claims 7, 15, 18, and 19

At paragraph 8 of the Final Action, Examiner incorrectly states that *Toh* comprises multiple nodes wired together to create a wired subnet that is controlled by a single subnet manager. First, *Toh* does not provide a wired subnet, having only wireless mobile units connected via a wireless medium. *Toh* also does not provide a single subnet manager. The

limitations/deficiencies in *Toh* and *Kakemizu* as they relate to Appellants' primary claim elements have been described above.

Examiner correctly recognizes that the combination of *Toh* and *Kakemizu* does not disclose "deactivating the management function of the subnet manager not selected as the single master subnet manager." Examiner appears to suggest that *Mahalingaiah* teaches this feature (Appellants' assume the missing reference name is *Mahalingaiah*). Col. 12, lines 37-43 of *Mahalingaiah* does not teach or suggest this feature. What is provided by that section of *Mahalingaiah* is a description of the three situations when reconfiguring the traffic manager occurs, including when a section (e.g., subnet) of the network is taken down or deactivated.

What is not taught nor suggested by that section is deactivating the management function of the subnet manager not selected as the master subnet manager. The specific examples provided with respect to reconfiguring only mentions the term "deactivating" in the context of deactivating an entire subnet of the network. One skilled in the art would not find this reference to deactivating to be synonymous to or suggestive of deactivating a subnet manger when another subnet manager is selected as a master subnet manager to control a merged subnet. Further, since none of the references suggest selecting a single one of the subnet managers as a master, it is clear that these references would not deactivate any of the subnet managers because this would effectively render that entire subnet inactive.

i. Claim 18

Col. 4, ll 27-45 of *Kakemizu* does not suggest the features recited by Appellants' Claim 18, and *Mahalingaiah* fails to provide support for Examiner's rejection of the deactivation features, as described above.

ii. Claim 19

Since *Toh* is devoid of any reference to a merged database or control of the merged database by a single subnet manager, *Toh* clearly does not suggest the features of Appellants' claim 19.

From the above arguments, Appellants have shown the various deficiencies in Examiner's rejection and provide sufficient arguments to support reversal of the rejections of the claims.

C. Examiner's rejection of Claims 2-6, 8, 10-14, and 20 under 35 U.S.C. §103(a) as being unpatentable over the above combination of *Toh*, *Kakemizu*, and *Jensen* is not well founded and should be reversed.

Claims 2-5, 8, 10-13, and 20

Examiner correctly states that *Toh* is silent about partition keys (P_keys) and global unique identifier (GUID), which are time stamped. Examiner references *Jensen* to support the rejection of this feature of Appellants' claims.

There is absolutely no motivation to combine *Toh* and *Jensen*, and Examiner fails to provide sufficient rationale behind the combination of these two references. *Toh* is strictly directed to loosely associated wireless mobile devices that communicate with each other to form a wireless communication grouping (see Figure 1), while *Jensen* is directed to an actual physical/wired network (Fig. 1). Further, while *Toh* is focused on routing communication among the wireless mobile devices based on data stability, *Jensen*, in direct contrast, focuses on storing of topology information in a cache and allowing managers to access the information.

The functional differences in implementing these two networks and differences in use of each resulting feature are sufficiently distinct that, absent Appellants' claimed invention, one skilled in the art would not be inclined to attempt to make the combination proffered by Examiner.

Even if one could conceivably find motivation to combine the references, that combination of *Toh* and *Jensen* does not suggest the features recited by Appellants' claims, and therefore one skilled in the art would not find Appellants' claimed invention obvious over the combination. For example, nowhere in either reference is there any suggestion of (1) a partition key and the functionality associated with the partition key or (2) a time stamp associated with

both the partition key and the GUID, or (3) the functionality attributed to the time stamp within Appellants' Claim 2, for example.

The referenced sections of *Jensen* (col. 9, lines 4-16, 19-26; and col. 10, lines 15, 9-18, (which generally mentions GUID)) are completely devoid of any teaching or suggestion of these features. Storing topology information in a cache and allowing managers to access the information does not suggest the above features.

ii. Claims 4, 12, and 20

Toh nor the various combinations of *Toh*, *Kakemizu*, *Jensen*, and *Mahalingaiah* does not suggest anything to do with the GUID-related features provided within Appellants' claims. Examiner again relies on *Jensen* to support the rejection of these claims. The limitations of *Jensen* are described above. Additionally, col. 10, ll 9-32 is devoid of any reference of selecting a most recent time stamped GUID as a representative GUID entry for a merged database. That section provides an identification of the requesting user via a GUID and a description of features of an authentication component for authenticating received requests.

iii. Claims 5 and 13

Col. 16, lines 53-58 does not disclose discarding a GUID entry not selected as a representative GUID entry in a merged database.

iv. Claims 6 and 14

Finally, *Toh* does not suggest any of the features related to replacing P_key entries in a GUID when merging databases into a single merged database. Referenced sections of *Toh* provide: route discovery phase via broadcast query (BQ) and reply cycles and route deletion phase (col. 8, ll 1-50); and merging subnets using a subnet bridging mobile host to form bigger subnets and "updating all the nodes' routing tables" or use of associativity characteristic to update only the affected mobile host's associativity tables (col. 7, ll 17-36). Notably, the former section further describes "neighboring nodes ... check is they previously processed the BQ packet" and if so, "the BQ packet is discarded." (ll 23-27). The section further states that retransmissions back to the source node are also discarded. Those sections are devoid of any

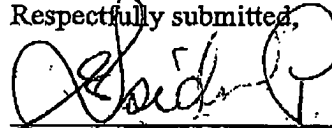
suggestion of changing the names of the P_Key entries from one database when the names are similar to those of the P_Key entries of another database. One skilled in the art would not find a description of discarding duplicate BQ packets received or retransmission packets as being synonymous with changing duplicate P_Key entries (across GUIDs) to new P_Key entries.

With the above arguments, Appellants have clearly shown why Appellants' claimed invention is not suggested by any of the above combination of references and pointed out the deficiencies in Examiner's rejections. All of the above rejections are therefore not well founded and should be reversed.

CONCLUSION

Appellants have pointed out with specificity the manifest error in the Examiner's rejections, and the claim language that renders the invention patentable over the combination of references. Appellants, therefore, respectfully request that this case be remanded to the Examiner with instructions to issue a Notice of Allowance for all pending claims.

Respectfully submitted,



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APPENDIX

1. A method for efficiently merging subnets comprising the steps of:
linking a first subnet, having a first subnet manager and a first database utilized to control the entire first subnet, with a second subnet, having a second subnet manager and a second database utilized to control the entire second subnet, to create a merged subnet; and
dynamically selecting and configuring one of said first subnet manager and said second subnet manager as a master subnet manager, which controls the entire merged subnet, wherein control of the entire merged subnet includes control of both said first subnet and said second subnet.
2. The method of Claim 1, wherein said first and second database comprise configuration entries, each including time-stamped a partition key (P_Key) and global unique identifier (GUID), which time-stamp indicates a time that said configuration entries are created and modified by respective ones of said first and second subnet managers.
3. The method of Claim 2, wherein said first subnet manager is selected as said master subnet manager, said method further comprising the step of:
absorbing said subnet configuration entries from said database of the second subnet manager to said database of said master subnet manager to create a merged database of subnet configuration entries.
4. The method of Claim 3, wherein said absorbing step further comprises the steps of:
determining that a first GUID entry of said second database is the same as a second GUID entry of said first database; and
in response to said determining step, selecting a most recent time-stamped GUID entry from among said first GUID entry and said second GUID entry as a representative GUID entry for said merged database.
5. The method of Claim 4, further comprising the step of discarding a GUID entry not selected as said representative GUID entry.

6. The method of Claim 4, wherein said absorbing step further comprises the steps of:
determining that a first P_Key entry of a GUID of said second database of said other subnet manager is the same as a second P_key entry of a different GUID of said first database;
in response to said determining step, changing all occurrences of said P_Key in said second database to a new P_Key value that is not one of said P_Key values within said first database and said second database.
7. The method of Claim 1, wherein said first and second subnets each comprises multiple nodes wired together to create a wired subnet that is controlled by a single subnet manager, and said selecting step provides a single master subnet manager, and further comprises de-activating the management function of the subnet manager not selected as the single master subnet manager.
8. The method of Claim 3, further comprising the step of configuring said merged subnet utilizing said master subnet manager.
9. A computer program product comprising:
a computer readable medium; and
program instructions on said computer readable medium for:
linking a first subnet, having a first subnet manager and a first database utilized to control the entire first subnet, with a second subnet, having a second subnet manager and a second database utilized to control the entire second subnet, to create a merged subnet; and
dynamically selecting and configuring one of said first subnet manager and said second subnet manager as a master subnet manager, which controls the entire merged subnet, wherein control of the entire merged subnet includes control of both said first subnet and said second subnet.
10. The computer program product of Claim 9, wherein said first and second database comprise configuration entries each including time stamped partition key (P_Key) and global unique identifier (GUID), which are time-stamped with a time said configuration entries are created and modified by respective ones of said first and second subnet managers.

11. The computer program product of Claim 10, wherein said first subnet manager is selected as said master subnet manager, said program product further comprising program instructions for:

absorbing said subnet configuration entries from said database of the second subnet manager to said database of said master subnet manager to create a merged database of subnet configuration entries.

12. The computer program product of Claim 11, wherein said absorbing instructions further comprises program instructions for:

determining that a first GUID entry of said second database is the same as a second GUID entry of said first database; and

in response to said determining step, selecting a most recent time-stamped GUID entry from among said first GUID entry and said second GUID entry as a representative GUID entry for said merged database and discarding an older time-stamped entry.

13. The computer program product of Claim 12, further comprising program instructions for discarding a GUID entry not selected as said representative GUID entry.

14. The computer program product of Claim 12, wherein said absorbing instructions further comprises program instructions for:

determining that a first P_Key entry of a GUID of said second database of said other subnet manager is the same as a second P_key entry of a different GUID of said first database;

in response to said determining step, changing all occurrences of said P_Key in said second database to a new P_Key value that is not one of said P_Key values within said first database and said second database.

15. The computer program product of Claim 9, wherein said first and second subnets each comprises multiple nodes wired together to create a wired subnet that is controlled by a single subnet manager, and said program instructions for selecting provides a single master subnet manager, and further comprises program instructions for de-activating the management function of the subnet manager not selected as the single master subnet manager.

16. (canceled)

17. A system area network comprising:

a first subnet with a first subnet manager and a first database of subnet entries;

a second subnet with a second subnet manager and a second database of subnet entries, wherein said second subnet is communicatively coupled to said first subnet to form a merged subnet;

logic components for selecting and configuring a master subnet manager from among said first subnet manager and said second subnet manager, wherein the master subnet manager controls the entire merged subnet, and wherein control of the entire merged subnet includes control of both said first subnet and said second subnet; and

software logic associated with said master subnet manager for merging said first database and said second database.

18. The system of Claim 17, wherein:

said first subnet manager is said master subnet manager; and

said first subnet manager absorbs configuration entries from said second database into said first database to create a merged database, and control/management functions of said second subnet manager not selected as the master subnet manager are deactivated.

19. The system of claim 18, wherein said first subnet manager controls and manages said system utilizing said merged database.

20. The system of Claim 17, wherein said first subnet manager determines when a first GUID entry in said first database is the same as a second GUID entry in said second database and dynamically selects a most recent time-stamped entry from among both of said first and second GUID entries for inclusion in said merged database and discarding an older time-stamped entry.